(13–31) and 6 (2–12). A human factors analysis of the circumstances of each case attributed 79% to a combination of user error and device malfunction or flawed alarm design. None of the events were documented in the medical record or in incident reports. **CONCLUSIONS:** Rates of alarm related problems in two ICUs were much higher than reported in a routine reporting system and indicate an understudied important threat to patient safety. An assessment of risk factors for these events is in progress.

ARTHRITIS/OSTEOPOROSIS—Clinical Outcomes/Healthcare Policy

PAR1

USE OF ALTERNATIVE THERAPY, QUALITY OF LIFE, AND HEALTHCARE SPENDING IN CHINESE PATIENTS WITH OSTEOARTHRITIS

Zhang JX[1], Woo J[2], Lau E[2]
[1]The Chinese University of Hong Kong, Shatin, Hong Kong; [2]The Chinese University of Hong Kong, Shatin, NT, Hong Kong

OBJECTIVES: To describe the pattern of use of alternative therapy, healthcare spending, and health-related quality of life in Chinese osteoarthritis (OA) patients in Hong Kong. **METHODS:** We conducted a retrospective, cross-sectional study of 547 adult Chinese patients in Hong Kong who have been diagnosed as having OA. We defined the alternative therapy as 1 of the 11 therapies outlined in international publications. OA patients who used alternative therapies and those who did not were compared for their socio-economic status, disease profile, personal healthcare spending, and quality of life. Quality of life was measured using a Health Utility Index based upon SF-36 health surveys. We further investigated the association between the use of alternative therapies and personal healthcare spending, and its association with the Health Utility Index, in multivariate regressions controlling for socio-economic variables, years of OA, and the severity of OA. **RESULTS:** Of the 547 OA patients, 219 (38.2%) had used 1 or more of the 11 alternative therapies for OA. The most commonly used therapies, (and the percentage of patients who used them), were acupuncture (21.4%), exercise (12%), herbal remedy (5.9%), lifestyle diets (5.8%), energy healing (4.4%), and chiropractic manipulation (3.8%). On average, payment for alternative therapies constitutes 5% of the overall personal healthcare spending, and 29% of the out-of-pocket payments. **CONCLUSION:** The use of alternative therapies was statistically significantly associated with higher personal healthcare spending, after adjusting for socioeconomic variables, years of OA and severity of OA. The use of alternative therapies was not significantly associated with an improvement in quality of life in the regression analysis.

PAR2

EFFECTS OF A PRIOR AUTHORIZATION POLICY FOR CYCLOOXYGENASE-2 INHIBITORS ON HEALTH-RELATED OUTCOMES IN A MANAGED CARE MEDICAID POPULATION

Hartung DM, Touchette DR, Ketchum KL, Haxby DG
Oregon State University, Portland, OR, USA

OBJECTIVES: Prior authorization (PA) is a poorly studied, but commonly employed policy used by health care payers to manage the rising costs of pharmacy benefits. Our objective was to evaluate the impact of PA policies for cyclooxygenase-2 (COX-2) inhibitors on prescription drug and medical service utilization in a managed care Medicaid population. **METHODS:** The analysis was conducted from January 1, 1999 to October 31, 2001 when PA policies were enacted for celecoxib and rofecoxib. Monthly annualized rates of utilization were estimated using medical and prescription drug billing records. An autocorrelation-corrected segmented linear regression model was developed to evaluate trends in utilization temporally associated with PA initiation. The primary analysis evaluated utilization of related drug classes (e.g. conventional NSAIDs, PPIs), and office, emergency, and hospital encounters in all enrolled members. A secondary analysis was performed in a cohort of prior NSAID (conventional and COX-2) users. **RESULTS:** After each PA was activated, utilization of celecoxib and rofecoxib were immediately reduced from 1.07 to 0.53 days supply/person-year (58.9% reduction; 95% CI: 50.0%–67.9%) and 0.96 to 0.52 days supply/person-year (49.8% reduction; 95% CI: 40.5%–59.1%), respectively. Growth in utilization was slowed for both agents ($p < 0.0001$). Utilization changes were not observed in other drug classes. Similar trends were observed in the secondary analysis. No changes in medical service use were noted with the exception of emergency room visits, which increased by 18.0% (95% CI: 2.2%–33.9%) and exhibited a higher growth rate after the PA for celecoxib was enacted. A similar, non-significant trend was observed in the secondary analysis. **CONCLUSIONS:** Utilization of rofecoxib and celecoxib was reduced substantially following the implementation of a PA policy. No important concomitant changes in the use of other drug classes were detected. The small increase in ER visits observed after the celecoxib PA was activated is a concerning finding that warrants further study.

PAR3

IMPACT OF THE INTRODUCTION OF THE COX-2 INHIBITORS ON THE ANALGESIC MARKET IN A PUBLIC EMPLOYEES INDEMNITY INSURANCE PROGRAM: A FIVE YEAR STUDY

Jenkins TL, Bui TT, Phung QL, Jacobs E
University of Oklahoma, Oklahoma City, OK, USA

OBJECTIVES: To analyze the market impact of the introduction of the COX-2 inhibitors, Celebrex and Vioxx,

within the NSAID class and other therapeutic classes that constitute the analgesic market. **METHODS:** The study design was a retrospective study of paid pharmacy claims for analgesic medications for a continuously insured population of 62,614 members from July 1996 to June 2001. Claims were divided into seven therapeutic categories: hydrocodone, narcotics, non-narcotics, newer NSAIDs (Relafen, Daypro, Arthrotec), older NSAIDs, oxycodone, and COX-2 inhibitors. Data of paid analgesic pharmacy claims were analyzed by overall analgesic market prescription claims, day supply, pain management therapies, per diem cost (ingredient cost per day supply) and market share per therapeutic category. **RESULTS:** Over the 5-year period, claims increased 29.1% while day supply per claim increased 17.7% for a total growth in day supply of almost 52%. The proportion of the population who used an analgesic also increased from 33.4% in the first year to 37.9% in the fifth year. There was a 15% increase in people receiving at least one analgesic prescription in a year over the 5-year period. Per diem costs for the market increased from $1.74 in the first year to $2.20 in the fifth year. Per member per month costs increased 69.3% from $12.36 in the first year to $20.93 in the fifth year. COX-2 inhibitors market share by day supply increased from zero to 39.6%. The market share of the newer NSAIDs decreased from 20.5% in the year prior to the introduction of the COX-2 inhibitors (year 2) to 5.5% in the fifth year. **CONCLUSIONS:** Based on day supply, the analgesic market grew almost 52% with COX-2 inhibitors garnering 39.6% within 3 years of market introduction. The COX-2's benefited from both the growth in the market and reduction in market share of the newer NSAIDs.

PAR4

ECONOMIC IMPLICATIONS OF NON-COMPLIANCE WITH OSTEOPOROSIS TREATMENT IN ACTUAL PRACTICE

Huybrechts K[1], Caro J[1], Ishak K[2], Naujoks C[3]
[1]Caro Research Institute, Concord, MA, USA; [2]Caro Research Institute, Dorval, QC, Canada; [3]Novartis Pharma AG, Basel, Switzerland

OBJECTIVES: Although it is well recognized, in both clinical research and actual practice, that non-compliance with osteoporosis treatment is a problem, its economic implications have not been well documented. The objective of this study was to quantify the implications of non-compliance in terms of all-cause hospitalizations and total costs. **METHODS:** Demographic, prescription drug use, physician services and hospitalization information for women with osteoporosis who were dispensed an osteoporosis medication between 1996 and 2001 was obtained from the Saskatchewan Health data files. Subjects were considered to be compliant over a given period of time if they had medication available during 80% or more of that time interval. Hospitalization rates and total costs in various patient groups were compared using descriptive analyses. The impact of compliance was assessed further using regression analysis on the logarithmically transformed total cost, controlling for prior history of hospitalizations (which was considered a proxy for morbidity). **RESULTS:** A total of 11,249 women suffering from osteoporosis were identified with an average follow-up of 2.3 years. More than half (50.6%) did not have medication available to cover at least 80% of the time they were followed and were thus considered non-compliant. Overall, 48.5% of patients were hospitalized an average of 2.7 times during follow-up. Non-compliant patients were significantly more likely to be hospitalized (54.3%) than compliant patients (42.6%) ($P < 0.0001$). The total monthly cost—including both hospitalization and physician service costs—was significantly higher for non-compliant ($245 CAD) than for compliant ($214 CAD) patients ($P < 0.05$). The same trend was observed for both cost components individually. The effect of compliance on total cost was maintained after controlling for hospitalization history. **CONCLUSION:** The desired goal of keeping patients with osteoporosis on chronic treatment is not achieved adequately in actual practice and the cost implications of this behavior are substantial.

PAR5